

Spray Drift From Orchard Airblast Applications

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Spray Drift Task Force

- Consortium of pesticide registrants
- Formed in response to EPA data requirements
- Supports registration of more than 2,000 products

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Purpose of the SDTF Studies

- Quantify drift from ground, aerial, airblast and chemigation
- Use for risk assessments



Spray Drift is not Active Ingredient Specific

- Formulation/tank mix have small effect - but not the active ingredient itself
- Droplet size spectrum and height are the major variables
- Wind speed next, then less impact of relative humidity, application speed and non-volatile fraction

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Spray Drift vs. Vapor Drift

- SDTF measure primary spray drift
- SDTF = movement of droplets and is generic
- Vapor drift = movement of gas and is product-specific



EPA Scientific Review



The information being presented is not an in-depth presentation of all data generated by the SDTF.

Use of pesticide products is strictly governed by label instructions.

Always read and follow the label directions.

Pesticide

Objective

Develop a generic database for evaluating a range of:

- Orchard types
- Atmospheric conditions
- Sprayer types

Pesticide

Factors Affecting Drift From Orchard Airblast Applications

- Droplet size
- Canopy characteristics
 - Height and shape
 - Foliation density
 - Open spaces between trees
- Wind speed

Pesticide

What do the SDTF findings tell us?

- Confirm and quantify the factors affecting drift
- Droplet size is the most important factor
- Drift only occurs downwind
- Cannot totally eliminate drift with current technology
- There are many ways to minimize drift
- Most of the spray stays on target

Pesticide

Drift from Orchard Airblast Application is Much Lower than Perceived

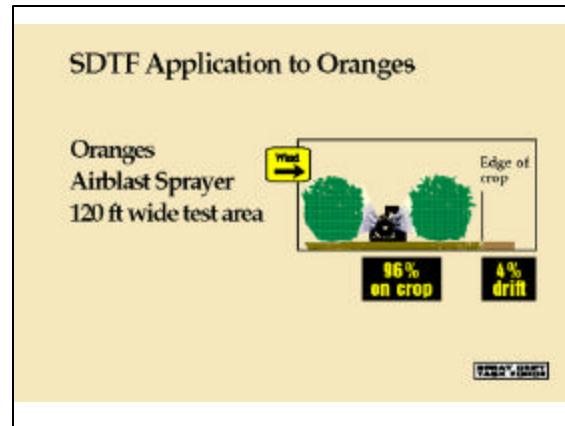
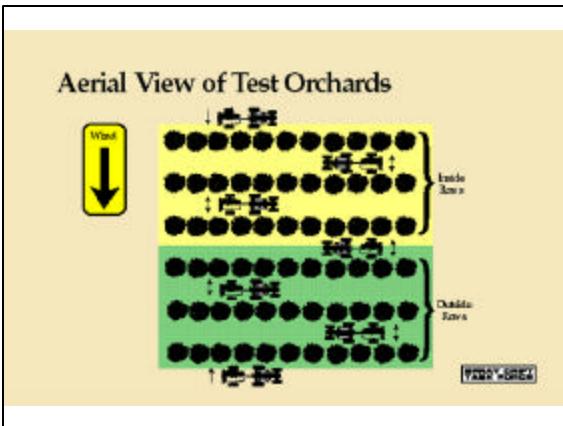
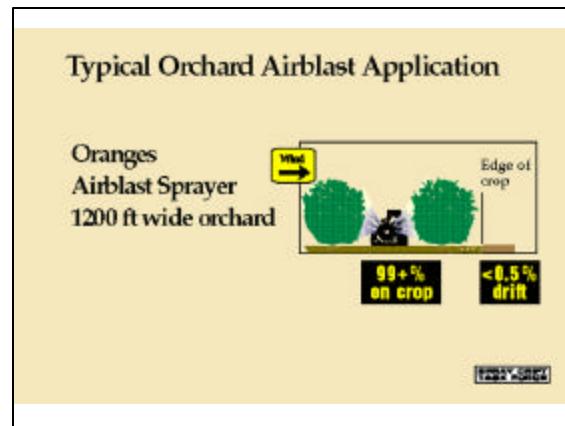
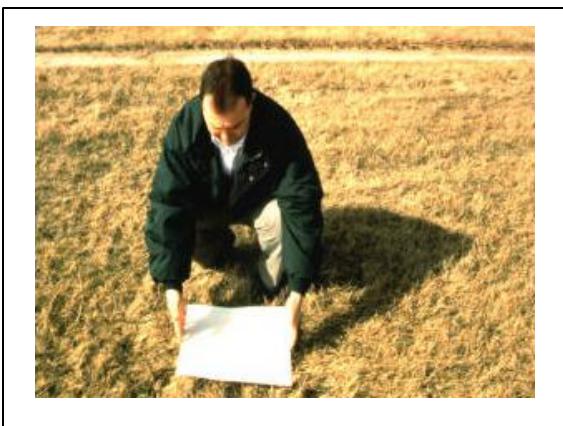
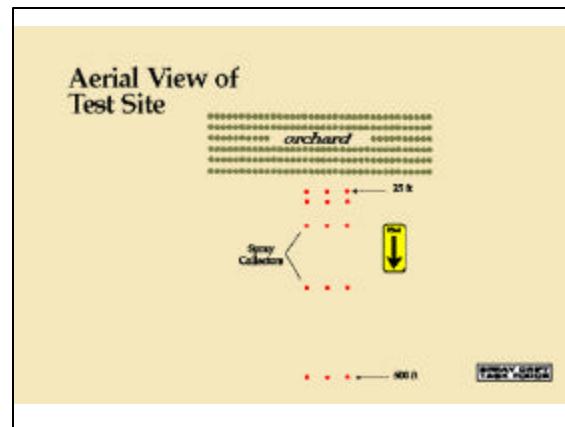
- The volume of water is high
- The concentration of active ingredient in the spray is very low
- Smaller droplets are intercepted by foliage
- Larger droplets do not move very far
- Orchard canopies reduce the effects of wind

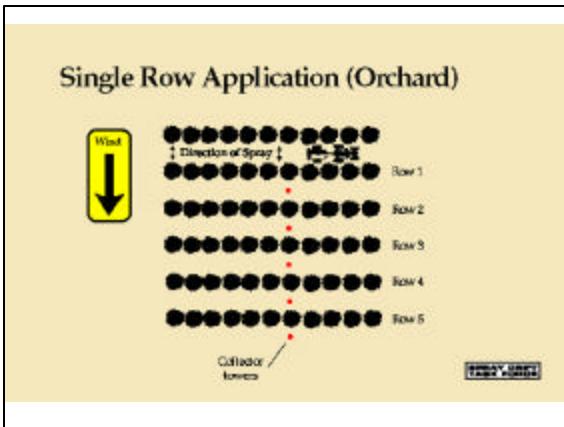
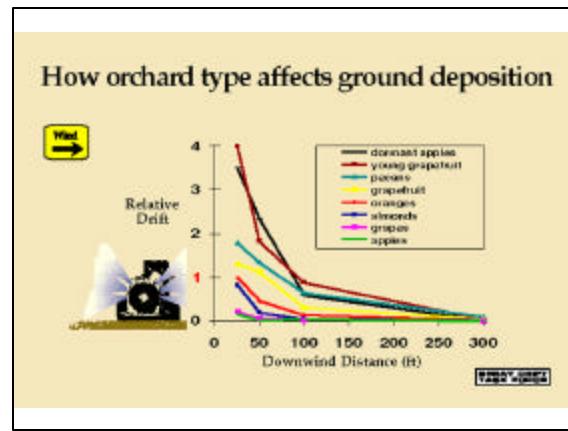
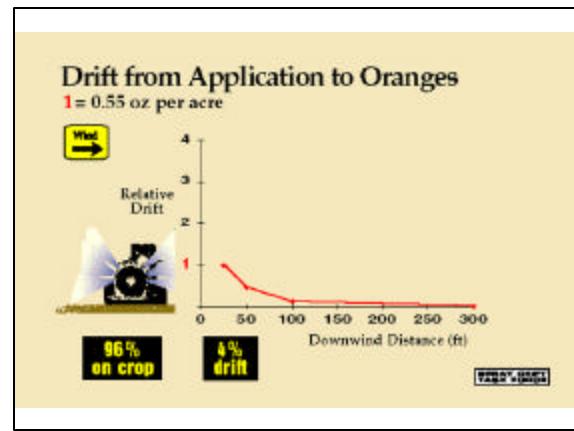
Pesticide

Experimental Profile

- 6 Crops
- 4 Sprayers
- 57 Applications

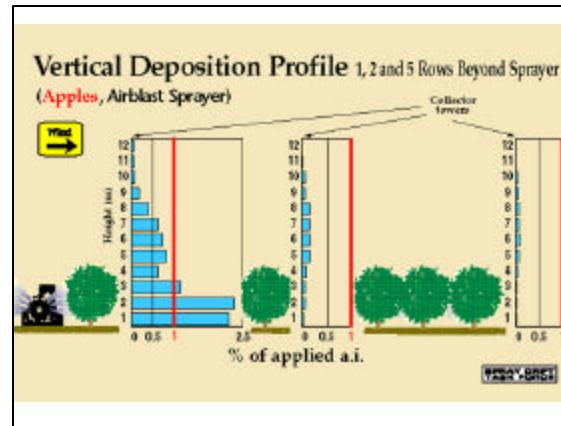
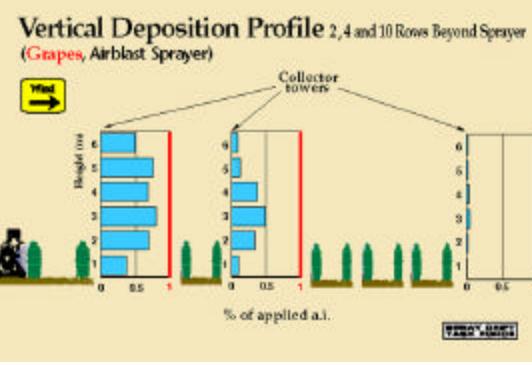
Pesticide

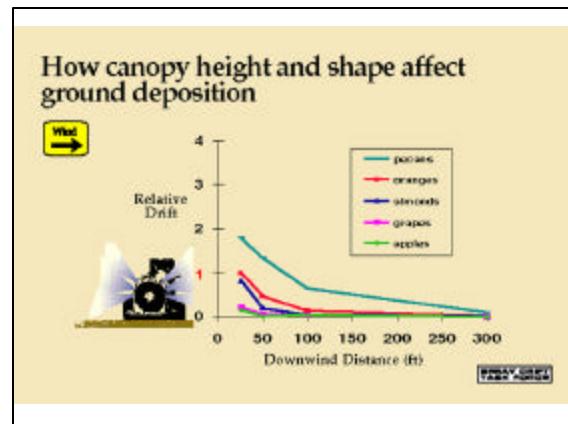
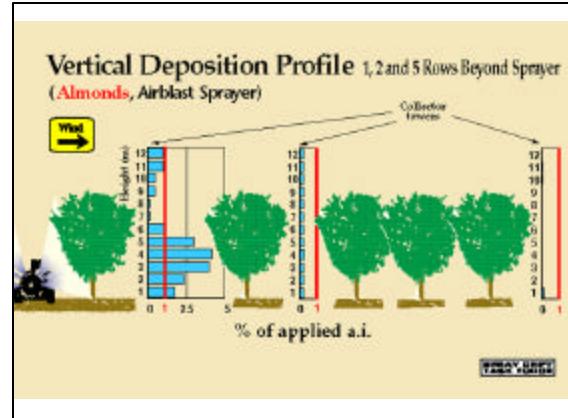




Findings

- Single row application
 - Height and shape
 - Foliage density
 - Open spaces between trees



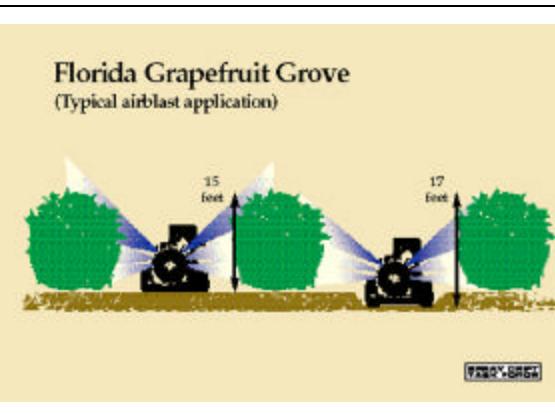
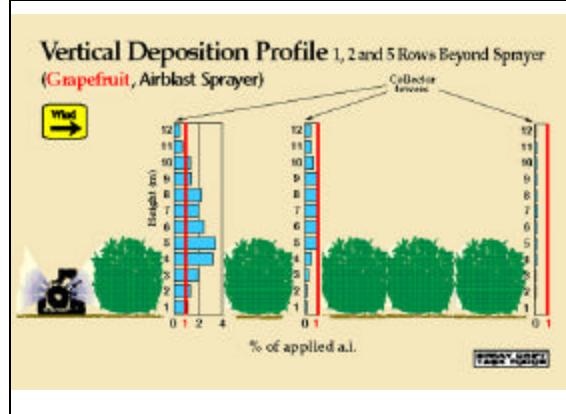
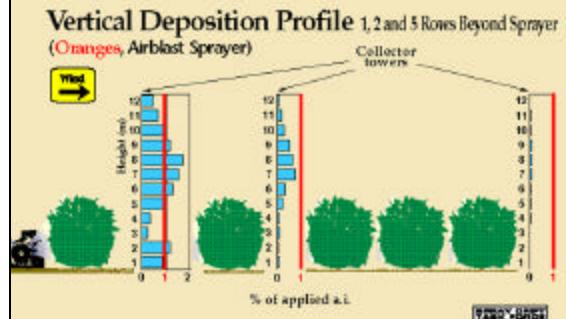


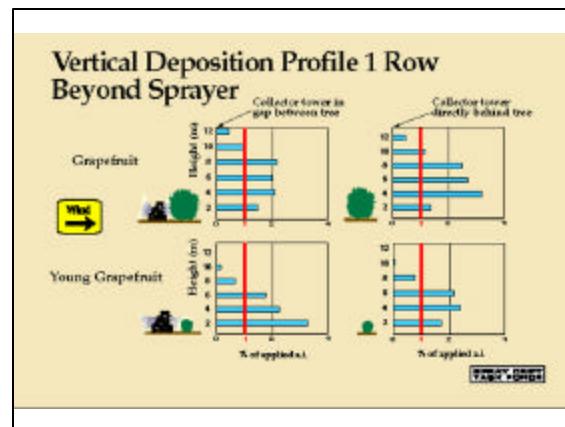
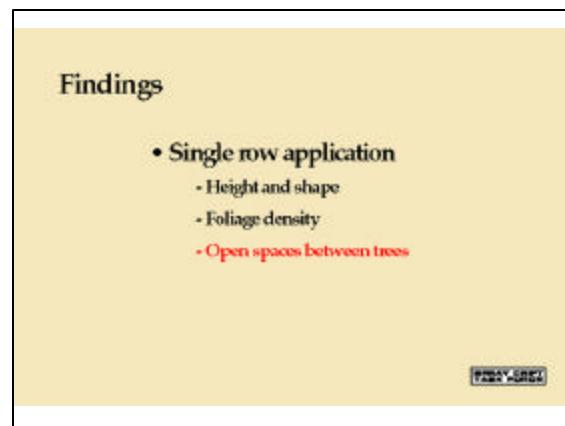
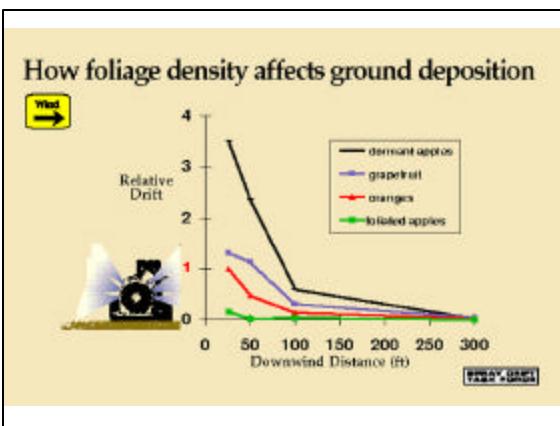
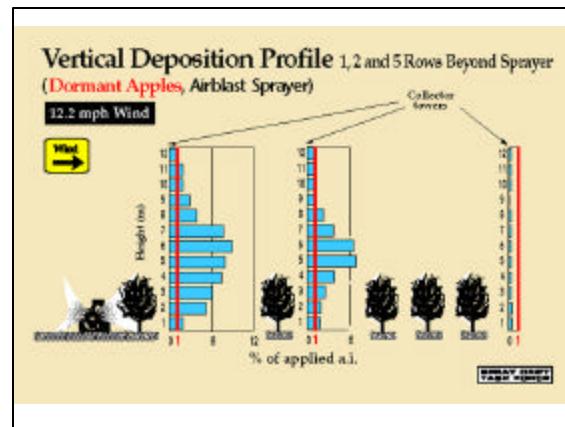
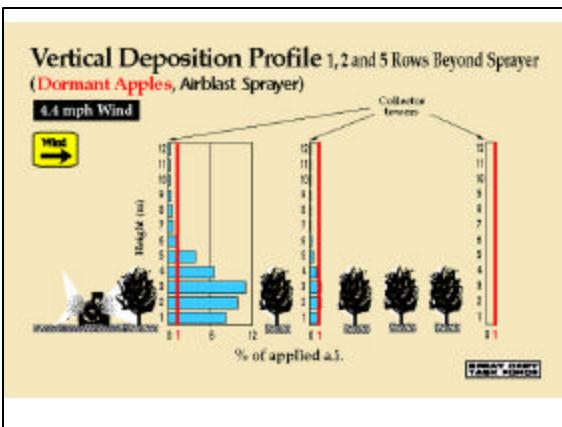
Findings

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 - Height and shape
 - Foliage density
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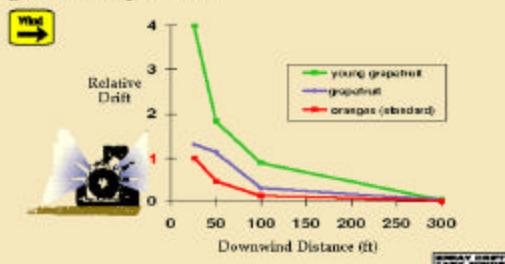
TANK SPRAYER



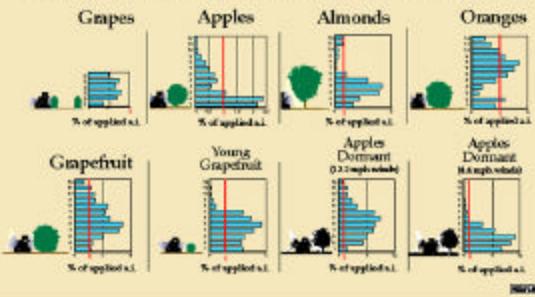




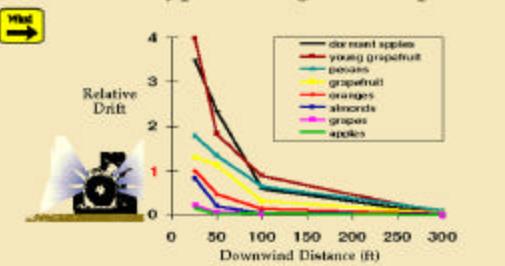
How open spaces between trees affect ground deposition



Vertical Deposition Profiles 1 Row (2 rows from grapes) Beyond Airblast Sprayer



How orchard type affects ground deposition



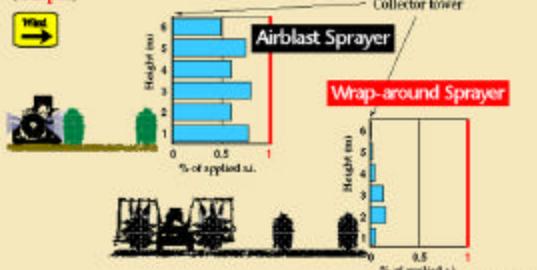
Findings

- Sprayer types

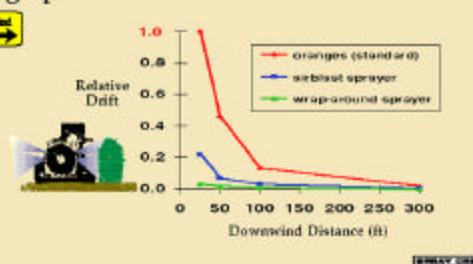
- Wrap-around sprayer in grapes
- Mist blower in grapefruit



Vertical Deposition Profile 2 Rows Beyond Sprayer (Grapes)



How sprayer type affects ground deposition in grapes

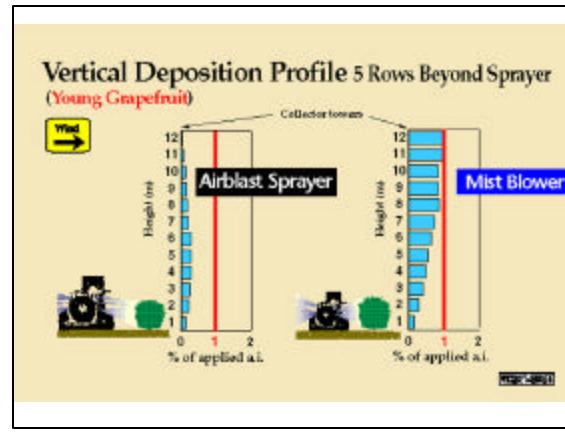
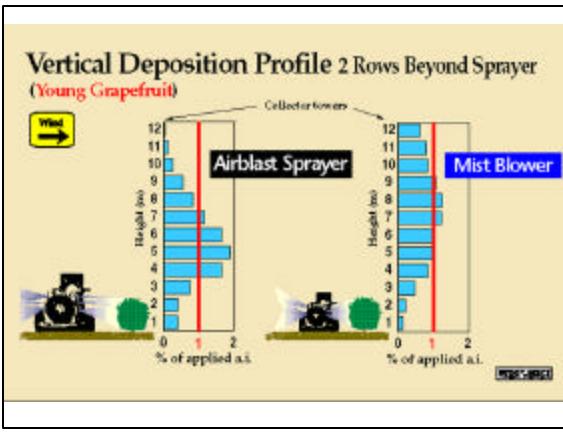
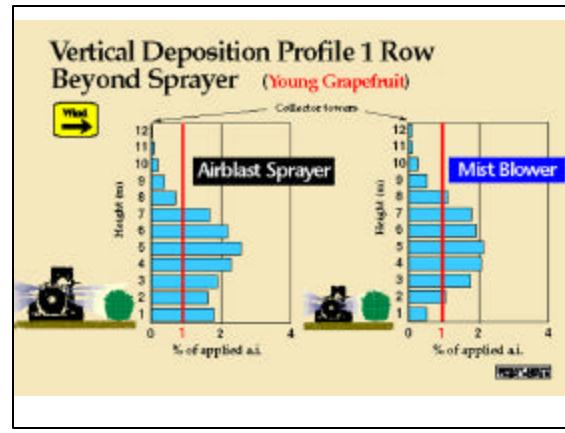
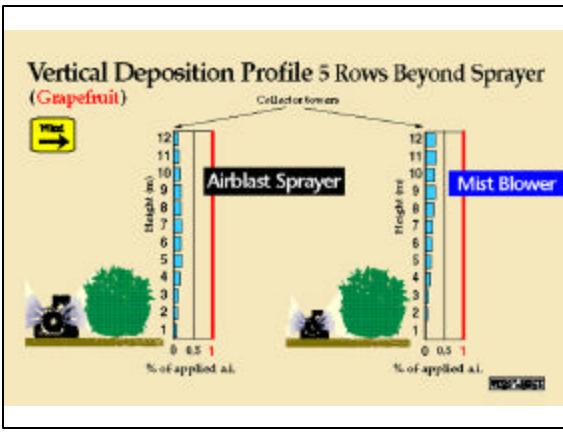
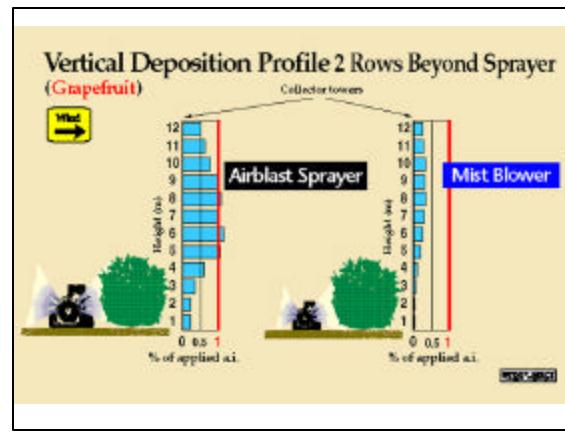
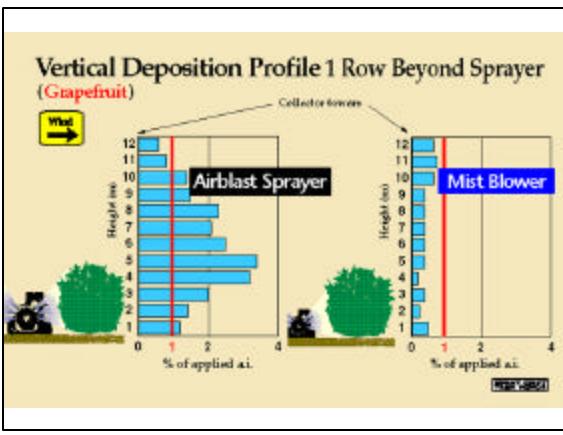


Percent Volume Less Than 141 Microns

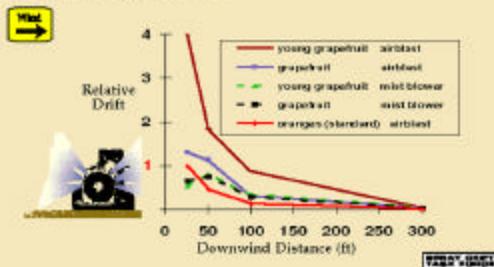
Droplet Size Parameters Airblast Sprayer and Mist Blower

	Range Across Nozzles	
	VMD* (microns)	Volume < 141 microns (%)
Mist blower	73-110	65-90
Airblast sprayer	138-210	26-52

*Volume Median Diameter



How tree size and sprayer affect ground deposition



Conclusions

Factors affecting drift from orchard airblast applications

- Droplet size
- Canopy characteristics
 - Height and shape
 - Foliage density
 - Open spaces between trees
- Wind speed



Conclusions

Drift from orchard airblast applications is much lower than perceived

- The volume of water is high
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SDTF Data Will Be Used For Environmental Risk Assessments

- Active ingredients have very little affect on drift
- Active ingredients differ in potential for environmental effects
- Buffer zones can protect sensitive areas
- Buffer zones are upwind and adjacent to the sensitive areas

